

October 20, 2015

Award #: F14AC00604

Performance Report for the period April 1, 2015 to September 30, 2015

Project Title

Designing Sustaining Coastal Landscapes in the Face of Sea-level Rise and Storms

Project Sponsor: US Fish and Wildlife Service, Region 5

Principal Investigator:

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Project Scope and Objectives

The specific objectives of this scope of work are as follows:

1. Develop and apply a tidal restriction stressor metric and salt marsh ditching stressor metric and incorporate them into the overall ecological integrity assessment for salt marsh ecosystems across the Northeast;
2. Develop landscape capability models for additional tidal marsh obligate species and piping plover in collaboration with partners and apply the models across the Northeast;
3. Work with LCC partners and coastal decision-makers to test and refine the coastal ecological integrity and landscape capability models, and
4. Incorporate these additional metrics and models into the overall Designing Sustainable Landscapes Landscape Change Assessment and Design model along with sea-level rise models and create and evaluate coastal conservation designs.

Accomplishments

Work on the tasks associated with this scope of work has been delayed by several months due to delays in completing phase 2 of the Designing Sustainable Landscapes (DSL) project, of which this project is an extension. The delays were the result of requests for additional analyses and model development by the partners involved in the Connecticut River watershed Landscape Conservation Design pilot which went beyond the original phase 2 scope of work. However, we have begun efforts to meet the above objectives during this work period as follows:

- 1) *Develop and apply a tidal restriction stressor metric and salt marsh ditching stressor metric and incorporate them into the overall ecological integrity assessment for salt marsh ecosystems across the Northeast.* As part of the expansion of the LCAD model to better evaluate the ecological integrity of salt marsh ecosystems in the Northeast, we scoped out the needs and availability of spatial data for the tidal restriction and salt marsh ditching metrics. In particular, we identified several limitations in our current spatial data representing road-stream crossings involving potential tidal restrictions (e.g., stream centerlines that do not extend far

enough into subtidal waters to capture all potential tidal restrictions) and have completed the process of correcting the data using both semi-automated routines and manual editing of data layers. In addition, we have made substantial progress in developing the salt marsh ditching metric using automated pattern recognition software applied to orthophoto imagery. Lastly, we have assessed the availability of tidal range data and tidal restriction needed for the tidal restriction metric and have initiated efforts to acquire the necessary data. I anticipate completion of the salt marsh ditching metric and an interim and incomplete tidal restriction metric and their integration into the composite index of ecological integrity (IEI) by December 31, 2015.

- 2) *Develop landscape capability models for additional tidal marsh obligate species and piping plover in collaboration with partners and apply the models across the Northeast.* As part of the expansion of the LCAD model to include additional tidal marsh obligate species and piping plover, we have begun communicating with partners who are developing distribution and/or abundance models for these species to determine what exists and the feasibility of either adopting extant models or the final product of the model (e.g., probability of occurrence raster), or reimplementing the model in the common species modeling framework of LCAD. I anticipate completion of the species' modeling and accompanying documentation by March 31, 2016.
- 3) *Work with LCC partners and coastal decision-makers to test and refine the coastal ecological integrity and landscape capability models.* Work has not begun in earnest on this component as it is dependent on completion of #1 and #2 above. Contingent upon timely completion of #1 and #2 above, I anticipate completion of the integration of the new metrics into the ecological integrity assessment and species landscape capability models by March 31, 2016.
- 4) *Incorporate these additional metrics and models into the overall Designing Sustainable Landscapes Landscape Change Assessment and Design model along with sea-level rise models and create and evaluate coastal conservation designs.* Work has not begun in earnest on this component as it is dependent on completion of #1-3 above. Contingent upon timely completion of #1-3 above, I anticipate completion of a coastal landscape design by May 31, 2016.

Please note that there are no youth under 25 years of age or veterans employed under this agreement.